OFFICE OF INSTRUCTIONAL PROGRAMS AND SERVICES
Summary of State Board of Education Agenda Items
May 17-18, 2007

OFFICE OF ACADEMIC EDUCATION

Office of Student Assessment

17. Approval to revise State Board Policy 7608 Procedures for Setting Student-Level Standards on the Mississippi Curriculum Test (MCT) and the Subject Area Testing Program (SATP) and to adopt performance level descriptors for language arts, mathematics, and science
(Has cleared the Administrative Procedures Act process with public comments)

Executive Summary

As part of the requirements under the *No Child Left Behind Act*, all states must develop descriptions of the knowledge and skills necessary for their students to achieve specific performance levels on their state assessments. The Mississippi Department of Education has endeavored to create a consistent process for the development of performance descriptors, across content areas, that are grade-level and content specific. The priority has been to create performance descriptors that fully align with the standards specified in the Mississippi Curriculum Frameworks so that teachers, students, and parents understand the expected level of performance based on the curriculum standards. The descriptors will also guide the assessment-development and standard-setting processes to maximize the alignment of cut scores with the expectations specified in the standards. These performance level descriptors were developed by committees of practitioners guided by experts from EdVantia and MDE staff. Performance descriptors have been established for:

Language Arts: Grades K-8, English I, English II, English III, and English IV

Math: Grades K-7, Pre-Algebra, Transition to Algebra, Algebra I, Geometry, Algebra II, Advanced Algebra, Trigonometry, Pre-Calculus, Calculus, Statistics, and Discrete Math

Science: Grade 5, Grade 8, and Biology I

These performance level descriptors will be effective beginning July 1, 2007.

State Board Policy 7608 has been revised to reflect the broader application of student-level standards to all state assessments, to better represent current practice, and to provide consistency in the language used across different documents.

Back-up material attached

Recommendation: Approval

DESCRIPTOR TERM:	CODE:
Setting Student-Level Standards for State Assessments	**7608**
ADOPTION DATE:	REVISION:
July 20, 2001	**May 18, 2007**

STATE BOARD POLICY

Procedures for Setting Student-Level Standards for State Assessments

STEP 1. Descriptor Development.
General student performance level descriptors are relatively broad and are used across grade levels and subject areas. These descriptors answer questions such as, "What does it mean for a student to be advanced, proficient, basic, or minimal on the test?" General descriptors have been written for the following (see below):

- Performance levels for State Assessments:
  - Advanced
  - Proficient
  - Basic
  - Minimal

- Pass/Fail Scores for the SATP: Algebra I, Biology I, English II, U.S. History from 1877

A committee of practitioners will assist the Department of Education in developing performance level descriptors that are grade, subject, and course specific.

STEP 2. Public Review of Descriptors.
This process will ensure broad-based input from educators, parents, community leaders, and other stakeholders in the development of student-level standards. Public comment required by the Administrative Procedures Act will serve as the means for collecting broad-based input.

STEP 3. Standard Setting for State Assessments.
This process will establish points on the score scale that differentiate the performance levels.

STEP 4. Technical Advisory Committee Review.
The Technical Advisory Committee reviews the results of the standard setting process.

STEP 5. Mississippi Board of Education Approval of Student-Level Standards.
The Mississippi Board of Education approves the points on the score scale that differentiate the performance levels.

General Performance Level Descriptors:

Performance Level	General Descriptor
Advanced	Students at the advanced level consistently perform in a manner clearly beyond that required to be successful in the grade or course in the content area. These students are able to perform at a high level of difficulty, complexity, or fluency as specified by the content standards.
Proficient [1]	Students at the proficient level demonstrate solid academic performance and mastery of the knowledge and skills required for success in the grade or course in the content area. These students are able to perform at the level of difficulty, complexity, or fluency as specified by the content standards. Students who perform at this level are prepared to begin work on even more challenging material that is required in the next grade or course in the content area.
Basic	Students at the basic level demonstrate partial mastery of the knowledge and skills in the grade or course in the content area and may experience difficulty in the next grade or course in the content area. These students are able to perform some of the content standards at a low level of difficulty, complexity, or fluency specified by the content standards. Remediation is recommended for these students.
Minimal	Students at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance. These students require additional instruction and remediation in the knowledge and skills that are necessary for success in the grade or course in the content area.

[1] *The goal is for all students in Mississippi to perform at the proficient level or above.*

General Descriptors: Student Pass/Fail Score on the Subject Area Tests

Pass/Fail Status	General Descriptor
Pass	Students passing the test demonstrate partial or full mastery of the knowledge and skills in the course.
Fail	Students failing the test are below basic and do not demonstrate mastery of the knowledge and skills required for success in the course.

Mississippi
Performance Level Descriptors
for the
2006 Mississippi Language Arts Framework Revised,
2007 Mississippi Mathematics Framework Revised,
and
2000 Mississippi Science Framework

April 2007

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INTRODUCTION

The Mississippi Department of Education has endeavored to create a consistent process for the development of performance level descriptors across content areas that are grade- and content-specific. The priority has been to create descriptors that fully align with the standards specified in the Mississippi Frameworks so that the descriptors can guide the assessment development and standard setting process in such a way as to maximize the alignment of cut scores with the expectations specified in the standards.

Purpose

This work was undertaken to meet part of the requirements of the *No Child Left Behind Act of 2001* (NCLB) as well as state law and Board requirements. NCLB requires that performance level descriptions for at least three levels, including basic, proficient, and advanced, are set forth. Alignment between academic content standards and performance level descriptors is required so that "proficient" reflects grade-level attainment of the content standards. Diverse stakeholders must be involved in the development of the performance level descriptors. Performance level descriptors provide coherent information, across grades and subjects, that is consistent in meaning with the standards and reflects the same progression of content and skills across grades. The performance level descriptor for proficient must reflect the intended cognitive processes at the appropriate grade levels as set forth in the standards. The total of the performance level descriptors must reflect the full range of the content standards in terms of cognitive challenge, cognitive complexity, and depth; describe the content and processes required for performance at each performance level as specified by the standards; reflect the degree and pattern of emphasis of the standards; and reflect the full range of performance across all levels.

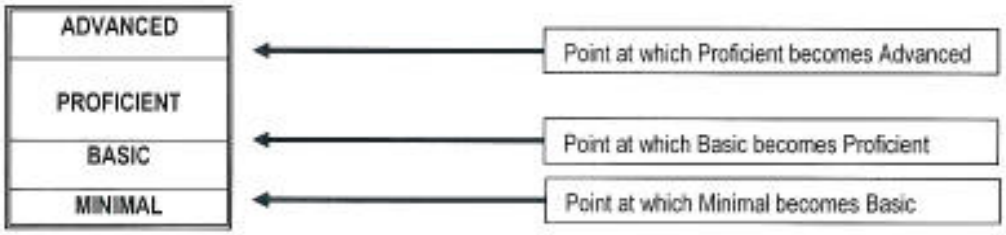
The performance level descriptor committees for language arts, mathematics, and science met together to ensure consistency in organization and prioritization across grade levels and content areas, despite differences in the organization of the Mississippi frameworks across content area documents. The performance level descriptors serve a dual purpose: (1) to guide the development of the assessments, cut score standard setting, and reporting descriptors; and (2) to guide teachers' instructional efforts to ensure that students reach proficient levels of performance on the content standards. These descriptors were developed by competency/strand, were combined and condensed for reporting purposes, and may be adjusted during the standard setting process to reflect the assessment and consequent standard setting results. Revisions may be made as needed during the standard setting process, in consideration of the actual assessment and assessment results. However, the development of performance level descriptors prior to assessment development and standard setting helps ensure that the standard setting committee will not be overly influenced by the impact data to move cut scores out of alignment with the content standards.

Development Committees

Members of the Performance Level Descriptor Committees were selected for their content expertise, grade-level knowledge, and specific expertise in working with significant subgroups represented in the Mississippi student population. The ethnicity of the group was representative of Mississippi's population as a whole. All grade levels and content areas for which descriptors were to be written were represented. Individuals with expertise and certification in special education who currently teach these students also participated in committees for all three content areas. Content area committees worked within grade-level clusters (Grades 3-5, Grades 6-8, and high school) and across grade levels for the entire content area. In science, although performance level descriptors were needed only for the grade levels tested, the cumulative nature of the grade-span tests required that Grades 3-8 be represented. Biology I descriptors developed by an earlier committee were reviewed and adapted to reflect more specific content and skills consistent with the newly developed performance level descriptors represented in this document. For a list of participants, see the Acknowledgements section in this document.

Performance level descriptors also can guide the development of the blueprint by providing direction in the development of an item pool that measures the full range of performance and ensuring "front-end alignment" of the assessment with the standards. Performance levels (advanced, proficient, basic) are labels for each level of performance. Performance level descriptors describe each level of performance. They are *not* rubrics and are not task-specific. They describe overall performance on a set of tasks (the assessment), define several distinct levels of performance, and align with a domain of content standards. Performance level descriptors align mastery of content to the culminating level of the content standard; describe increasing knowledge and sophistication across the performance levels; define progress in learning from one level to another; describe learning at each level; specify the content concepts; skills and process to be performed, and differentiate the cognitive challenge demonstrated at each level.

Performance level descriptors do not describe the full range of performance within a performance level. Rather, they describe the threshold between levels of performance. That is, to be judged to have achieved a performance level, the student must at least be able to exhibit performance described at that level. The student may be able to do much more, but until the student is able to perform all that is described in the next-higher level of performance, the student is assigned the lower level. These performance level descriptors describe performance for each threshold as shown below.



Development Process

To ensure that the performance level descriptors maintain and reflect the challenge and rigor of the standards, the committee is introduced to the National Assessment of Educational Progress (NAEP) descriptors at the beginning of the revision process, along with a discussion of the state's performance on NAEP as compared with the old state assessment. While the NAEP descriptors are available for only a few grade levels in each content area, they are used as models of challenge and rigor at those grade levels and to re-enforce the need for the greater challenge and rigor evident in the revised Mississippi frameworks. This emphasis on increased challenge and rigor is undertaken to convey to committee members the need to maintain alignment with the Mississippi frameworks and the performance level descriptors, though the level of rigor has clearly escalated significantly from the previous curriculum frameworks.

As part of their work, committee members are required to consider whether they have captured in the proficient performance level descriptor the level of cognitive complexity required by the Mississippi frameworks. The use of a particular verb is not sufficient to capture the true breadth and depth of the standard, particularly as the same verbs may be used to describe more than one level of cognitive complexity. The complexity of the content or skills themselves has greater significance for the breadth and depth that is intended. For example, "Analyze letter sounds to read a new word" is a very different level of cognitive complexity from "Analyze a literary passage containing multiple plot lines to determine the universal theme." Yet, the verb "analyze" may suggest otherwise. The proficient level descriptors must capture the breadth and depth of the content and skills to ensure alignment with the level of cognitive complexity.

A horizontal alignment procedure was conducted several times throughout the descriptor development process to ensure that the proficient performance level descriptors were aligned with the Mississippi frameworks for each

The grade-specific performance descriptors convey the performance of students who reach the threshold of the particular performance level, not the full range of performance that might be found within that level. For example, a student who is performing at the proficient level is able to do the things described but may also be able to perform some of the content at a higher level or to perform more complex content than is described. Unless this student also performs all of the requirements described at the advanced level, the student's performance remains at proficient performance and not at advanced performance.

Conclusion and Disposition

Performance Level Descriptor documents are presented to the Mississippi Board of Education for approval pending finalization in the standard setting process. When the Board approves the initiation of the Administrative Procedures Act (APA) process, the performance level descriptors are distributed to school districts and made available to the public for public comment. At the conclusion of the comment period, the comments received are considered and incorporated as appropriate to the purposes of the document. The performance level descriptors are then re-presented to the Board, along with a record of the comments and their disposition. At that time, the Board considers the performance level descriptor standards for final approval.

Bibliography

Crane, E. W., & Winter, P. C. (2006). *Setting coherent performance standards.* Washington, DC: Council of Chief State School Officers.

Education Commission of the States. (1998). *Designing and implementing standards-based accountability systems.* Denver, CO.

Hansche, L. (1998). *Handbook for the development of performance standards: Meeting the requirements of Title I.* Washington, DC: U.S. Department of Education and the Council of Chief State School Officers.

Jaeger, R. M., & Tucker, C. G. (1998). *Analyzing, disaggregating, reporting, and interpreting students' achievement test results: A guide to practice for Title I and beyond.* Washington, DC: Council of Chief State School Officers.

Linn, R. L., & Herman, J. L. (1997). *A policymaker's guide to standards-led assessment.* Denver, CO: Center for Research on Evaluation, Standards, and Student Testing and the Education Commission of the States.

Rabinowitz, S., Roeber, E., Schroeder, C., & Sheinker, J. (2006). *Creating aligned standards and assessment systems.* Washington, DC: Council of Chief State School Officers.

Sheinker, J. M., & Redfield, D. (2001). *Handbook for professional development on assessment literacy.* Washington, DC: Council of Chief State School Officers.

MISSISSIPPI LANGUAGE ARTS PERFORMANCE LEVEL DESCRIPTORS

Performance at any higher level assumes mastery of content of lower level(s).

	Kindergarten Language Arts Performance Level Descriptors
Advanced	Students performing at the advanced level: **In vocabulary:** Use knowledge of vocabulary to sort words into categories and justify how words are categorized. Generate synonyms and antonyms for words. **In reading comprehension:** Apply strategies and skills to comprehend, respond to, interpret, or evaluate a variety of texts of increasing levels of length, difficulty, or complexity. Understand and make inferences about characters, settings, and events in a story. Retell many events in the text without using the book as a reference. **In writing:** Use an appropriate composing process to produce descriptions, personal stories, and informational texts independently and as a part of shared writing. Produce many written texts independently. **In grammar:** Use many adjectives, articles, and conjunctions when communicating with others. Use capitalization and end punctuation in independent writing. Spell sight words.
Proficient	Students performing at the proficient level: **In vocabulary:** Apply knowledge of concepts about print (voice print match, left to right and top to bottom, distinguishing between letters and words, uppercase and lowercase). Recognize the beginning, final, and some medial sounds in spoken words. Blend phonemes orally to make words and segment phonemes orally within spoken words. Match **all** consonant and short vowel sounds to the appropriate letters. Understand the alphabetic principle. Blend letter sounds in one-syllable words. Read high-frequency words and sight words in text. Understand and explain the meanings of affixes (un-, re-, -s, -es, -ed, -ing). Use words to describe location, size, color, and shape. Recognize commonly used synonyms and antonyms. Use pictures and context to determine the meaning of a word. Understand reference materials (picture dictionary, teacher and/or peer) may be used to understand unknown words. **In reading comprehension:** Apply strategies and skills to comprehend and respond to a variety of texts. Use text features (titles, illustrations), parts of a book (title page, title, author, illustrator, etc.), text structures (sequential order), and genres (fiction, nonfiction, and poetry) to analyze text. Understand and make simple inferences about text. Generate an appropriate summary or paraphrase of text. Respond to texts in a variety of ways (compose visual images, identify favorite passages) that reflect understanding and interpretation. **In writing:** Use an appropriate composing process to produce descriptions, personal stories, and informational texts as a part of shared writing. Produce some written texts independently. **In grammar:** Use standard English grammar to generate complete sentences. Recognize and use capital letters (first word in a sentence, name) and end punctuation (period, question mark) to compose or edit in shared writing. Use developmentally appropriate spelling (first and last name, some sight words.)
Basic	Students performing at the basic level: **In vocabulary:** Apply knowledge of concepts about print (book orientation, print carries meaning, front cover, back cover and title page). Break spoken sentences into words. Identify and produce rhyming words. Match some consonant and short vowel sounds to the appropriate letters. Name pictures of common objects. **In reading comprehension:** Answer literal who, what, and where questions. Retell a familiar story with the book as a reference. **In writing:** Use an appropriate composing process to produce simple sentences. **In grammar:** Recognize the use of capitalization (first word in a sentence) and end punctuation in texts. Recognize use of (nouns and verbs) to compose simple sentences.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Grade 2 Language Arts Performance Level Descriptors
Advanced	Students performing at the advanced level: **In word recognition/vocabulary:** Manipulate and analyze roots and affixes (mis-, pre-, -y, -ly, -er, -est, -ful, and –less) to create new words. Justify the use of context clues to infer meaning. **In reading comprehension:** Evaluate a summary or paraphrase of the events or ideas in text. Compare the use of text features, parts of a book, text structures, and genres in two or more texts citing text-based evidence. **In composing:** Use an appropriate composing process to generate short texts based on simple research. **In grammar, usage and mechanics:** Justify the use of standard English grammar (common, proper, and possessive nouns; helping and irregular verbs; verb tense; subject-verb agreement; possessive, comparative and superlative adjectives; subject pronouns, singular pronouns, plural pronouns; and adverbs) to compose or edit. Justify the use standard English mechanics (commas in series, addresses, greetings and closings of friendly letters; quotation marks in quotations; underlining/italics in titles of books and movies; apostrophes in possessives; and capitalization in holidays, titles, and initials) to compose or edit.
Proficient	Students performing at the proficient level: **In word recognition/vocabulary:** Add, delete, substitute, or begin to transpose a phoneme to change a spoken word in the initial, medial, and final position. Use word recognition skills for decoding multi-syllabic words. Analyze roots and affixes (mis-, pre-, -y, -ly, -er, -est, -ful, and –less) to understand unfamiliar words. Apply knowledge of words and word meanings to determine the relationships between pairs of words. Use synonyms, antonyms, and homonyms. Use context to determine the meanings of unfamiliar or multiple meaning words. Use reference materials to determine the meaning or pronunciation of unknown words (glossary). **In reading comprehension:** Use text features (captions, charts), parts of a book (glossary), text structures (simple cause and effect), and genres to analyze text. Analyze texts in order to identify, understand, infer, or synthesize information. Determine simple cause and effect relationships. Identify simple facts and opinions. Draw conclusions based on information from narrative and/or informational text. Generate appropriate summary or paraphrase of the events or ideas in text citing-based evidence. Analyze, interpret, compare, or respond to text citing text-based evidence. **In composing:** Use an appropriate composing process to produce descriptive text containing specific details; narrative text with a beginning, middle and end; and informational text with a main idea and supporting details. Generate questions and use one source to locate the answers. **In grammar, usage and mechanics:** Use standard English grammar (common, proper, and possessive nouns; helping and irregular verbs; conjugation and purpose for past, present, and future tense; subject-verb agreement; possessive, comparative and superlative adjectives; prepositions; subject pronouns [singular and plural]; adverbs) to compose or edit. Use standard English mechanics (periods in common abbreviations [titles of address]; commas in series, addresses, greetings and closings of a friendly letter; quotation marks in quotations; underlining/italics in titles of books and movies; apostrophes in possessives; capitalization in holidays, titles, and initials) to compose or edit. Spell words commonly found in second-grade-level texts. Compose sentences with a variety of purposes (imperative/command or request). Compose compound sentences.
Basic	Students performing at the basic level: **In word recognition/vocabulary:** Blend and segment spoken words into syllables. Identify and count syllables in words. Use word recognition skills to decode one and two syllable words. Use syllabication types to decode words. Identify roots and affixes (mis-, pre-, -y, -l, -er, -est, -ful, -less) in multi-syllabic words. Identify synonyms, antonyms, and homonyms. Use reference materials to find or spell words. **In reading comprehension:** Answer literal and simple inferential question about a narrative. Identify the main idea of a simple story or the topic of informational text. Identify an appropriate summary or paraphrase of the events in text. Identify favorite passages in text. **In composing:** Use an appropriate composing process to create a description of a familiar person, place or thing, retell personal stories, or create functional texts (labels, directions, shopping lists). **In grammar, usage and mechanics:** Recognize the use standard English grammar (common, proper, and possessive nouns; helping and irregular verbs; conjugation and purpose for past, present, and future tense; subject-verb agreement; possessive, comparative and superlative adjectives; prepositions; subject pronouns [singular and plural]; adverbs) in sentences. Recognize the use standard English mechanics (periods in common abbreviations [titles of address]; commas in series, addresses, greetings and closings of a friendly letter; quotation marks in quotations; underlining/italics in titles of books and movies; apostrophes in possessives; capitalization in holidays, titles, and initials) in sentences. Recognize sentences with a variety of purposes (imperative/command or request). Recognize compound sentences.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Grade 4 Language Arts Performance Level Descriptors (Note: The PLD for this grade does not contain numbered items/sub-objectives listed for earlier grades; only those new to this grade are incorporated. However, for state assessments, students are responsible for objectives and numbered items/sub-objectives in earlier grades.)
Advanced	Students performing at the advanced level: **In vocabulary:** Compare the use of figurative language in multiple texts to justify inferred meaning of words. Justify the use of context clues to infer meaning. **In reading comprehension:** Evaluate an inferred outcome or synthesis based on text-based evidence. **In writing:** Based on audience and purpose, justify an appropriate composing process to produce or evaluate descriptive, narrative, informational, or persuasive text of increasing complexity and length. Justify composed text based on inquiry and research. **In grammar:** Apply knowledge of standard English grammar purposefully using present perfect verb tense to achieve a purpose. Apply knowledge of standard English mechanics and sentence structure purposefully including phrases and clauses to produce texts with sophisticated grade-level syntax.
Proficient	Students performing at the proficient level: **In vocabulary:** Identify roots and affixes (non-, trans-, over-, anti-, -tion, -or, -ion, -ity, -ment, -ic) in words. Apply expansive knowledge of words and word meanings. Apply knowledge of simple figurative language (hyperbole) to determine meaning of words and communicate. Use context clues (definitions, synonyms, or antonyms) to infer meanings. Use reference materials (dictionary, glossary) to determine syllabication, synonyms, antonyms, and parts of speech for unknown words. **In reading comprehension:** Apply knowledge of text features (boldfaced print, italics, maps, icons, pull-down menus, key word searches); parts of a book (appendix, footnotes); text structures (compare/contrast); and genres to interpret or analyze text. Analyze texts in order to infer or synthesize information. Generate a summary or paraphrase of events or ideas in text, citing text-based evidence. Interpret increasingly complex text to compare and contrast information regarding story elements (setting, characters, character traits, events, resolution, point of view); literary devices (imagery, exaggeration, dialogue); sound devices (rhyme, rhythm, alliteration, onomatopoeia, assonance); and author's purpose (inform, entertain, persuade). Identify tools of persuasion (name calling, endorsement, repetition, air and rebut the other side's point of view) in text. **In writing:** Use an appropriate composing process to produce descriptive text using specific details and varied language; narrative text relating an event with a clear beginning, middle, and end; informational text clearly expressing a main idea with supporting details, including but not limited to text containing chronological order, cause and effect, compare and contrast, or simple procedure; simple persuasive text clearly expressing a main idea with supporting details for a specific purpose and audience; text based on inquiry and research. **In grammar:** Apply standard English grammar (appositives, linking verbs; present perfect verb tense; object, reflexive, and demonstrative pronouns; comparative forms of adverbs) and standard English mechanics (commas for introductory prepositional phrases and nonessential appositive phrases; quotation marks with titles of songs and titles of short stories; colons before lists introduced by sentences; capitalization of first word in greetings and closings of friendly letters and of proper adjectives) to compose or edit. Apply knowledge of sentence structure (simple sentences with compound subjects and/or compound predicates; complex sentences, including independent and dependent clauses; sentences with descriptive adjectives, adverbs, prepositional phrases functioning as adjectives or adverbs, and appositive phrases) to compose or edit, avoiding comma splices. Spell words commonly found in fourth-grade-level text.
Basic	Students performing at the basic level: **In vocabulary:** Use syllabication types for decoding words. Identify and produce synonyms, antonyms, and homonyms. Apply knowledge of simple figurative language (simile, metaphor, personification) to determine meaning. Use reference materials (dictionary, glossary) to determine the meaning and pronunciation of unknown words. **In reading comprehension:** Recognize and identify text features (boldfaced print, italics, maps, icons, pull-down menus, key word searches); parts of a book (appendix, footnotes); text structures (compare/contrast) and genres to understand text. Analyze text to identify and understand information. Recognize a summary or paraphrase of the events or ideas in text. Use text to identify story elements, literary devices, sound devices, and author's purpose. Distinguish between fact and opinion. **In writing:** Use an appropriate composing process to produce grade-level descriptive text; narrative text with a clear beginning, middle, and end; informational text; and simple persuasive text. **In grammar:** Recognize standard English grammar (appositives, linking verbs; present perfect verb tense; object, reflexive, and demonstrative pronouns; comparative forms of adverbs) and standard English mechanics (commas for introductory prepositional phrases and nonessential appositive phrases; quotation marks with titles of songs and titles of short stories; colons before lists introduced by sentences; capitalization of first word in greetings and closings of friendly letters and of proper adjectives). Recognize sentence structure incorporating simple sentences with compound subjects and/or compound predicates; complex sentences, including independent and dependent clauses; sentences with descriptive adjectives, adverbs, prepositional phrases functioning as adjectives or adverbs, appositive phrases, comma splices.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Grade 6 Language Arts Performance Level Descriptors (Note: The PLD for this grade does not contain numbered items/sub-objectives listed for earlier grades; only those new to this grade are incorporated. However, for state assessments, students are responsible for objectives and numbered items/sub-objectives in earlier grades.)
Advanced	Students performing at the advanced level: **In vocabulary:** Justify the use of context clues used to determine meaning of multiple meaning words or to infer meaning of figurative language. Justify vocabulary usage based on appropriateness for context and purpose. Justify selection of word choice based on use of reference materials. **In reading comprehension:** Justify an inferred outcome, synthesis, or conclusion based on text-based evidence in text of increasing length, difficulty, and complexity. Justify the use of tools of persuasion for their effectiveness in text of increasing length, difficulty, and complexity. **In writing:** Based on audience and purpose, justify an appropriate composing process utilizing vivid word choice and effective organization to produce or evaluate descriptive, narrative, informational, or persuasive text of increasing complexity and length. Justify text comparing and contrasting findings composed in a variety of modes based on inquiry and research. **In grammar:** Apply knowledge of standard English grammar purposefully using future perfect tense to achieve a purpose. Apply knowledge of standard English mechanics and sentence structure purposefully including introductory clauses, nonessential clauses, and adjective and adverb clauses to produce texts with sophisticated grade-level syntax.
Proficient	Students performing at the proficient level: **In vocabulary:** Apply knowledge of roots and affixes (com-, ex-, il-, mid-, under-, sub-, -ance, -ence, -ive, -en) to determine the meaning of multi-syllabic words. Apply expansive knowledge of words and word meanings to communicate. Use context clues to determine the meanings of multiple meaning words and the figurative meanings of text. Use reference materials to evaluate word choice in a variety of texts and to determine meaning. Analyze and evaluate vocabulary usage based on appropriateness for context and purpose. **In reading comprehension:** Apply knowledge of text features, parts of a book, text structures, and genres (plays) to gain information and analyze texts. Analyze text to infer (cause and effect based on sequence of events; predict outcomes), draw conclusions, or synthesize information. Generate an appropriate summary or paraphrase of events or ideas in literary text, literary non-fiction, and informational text of increasing length, complexity, and difficulty, citing text-based evidence. Interpret increasingly complex literary text, literary non-fiction, and informational text to compare and contrast information, citing text-based evidence. Analyze facts, opinions, and tools of persuasion (plain folks, tabloid thinking, shock tactics and fear, intertextual references) in text. **In writing:** Use an appropriate composing process to produce descriptive text, incorporating sensory details; narrative text, utilizing effective organization and vivid word choice containing multiple events; informational text including but not limited to texts containing chronological order, procedure, cause and effect, order of importance, and problem/solution; persuasive text utilizing effective word choice and organization; text comparing and contrasting findings based on inquiry and research. **In grammar:** Apply knowledge of standard English grammar (direct and indirect objects; transitive and intransitive verbs; future perfect tense; subject-verb agreement in sentences with indefinite pronouns, compound subjects, and prepositional phrases separating subject and verb; indefinite and relative pronouns) and standard English mechanics (commas with introductory clauses and nonessential clauses; underlining/italics with plays and television shows) to compose or edit. Apply knowledge of sentence structure (adjective clauses, adverb clauses) to compose or edit. Spell words commonly found in sixth-grade-level texts.
Basic	Students performing at the basic level: **In vocabulary:** Identify of roots and affixes in multi-syllabic words; identify and produce grade-level appropriate synonyms, antonyms, and homonyms; identify figurative language in text of increasing length, complexity and difficulty. **In reading comprehension:** Recognize, identify, and use text features, parts of a book, text structures, and genres to understand text. Recognize and identify an appropriate summary or paraphrase of events or ideas in text of increasing length, complexity, and difficulty. Identify and compare story elements, literary devices, sound devices, and author's purpose in text of increasing length, complexity, and difficulty. Recognize and identify fact, opinion, and tools of persuasion in text of increasing length, complexity and difficulty. **In writing:** Use an appropriate composing process to produce grade-level descriptive text, using specific details; narrative text, relating an event with a clear beginning, middle, and end; informational text, clearly expressing a main idea with supporting details; text based on inquiry and research presenting paraphrased information. **In grammar:** Recognize the use of standard English grammar (direct and indirect objects; transitive and intransitive verbs; future perfect tense; subject-verb agreement in sentences with indefinite pronouns, compound subjects, and prepositional phrases separating subject and verb; indefinite and relative pronouns) and standard English mechanics (commas with introductory clauses and nonessential clauses; underlining/italics with plays and television shows). Recognize sentence structure incorporating adjective and adverb clauses.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Grade 8 Language Arts Performance Level Descriptors (Note: The PLD for this grade does not contain numbered items/sub-objectives listed for earlier grades; only those new to this grade are incorporated. However, for state assessments, students are responsible for objectives and numbered items/sub-objectives in earlier grades.)
Advanced	Students performing at the advanced level: **In vocabulary:** Justify word choice based on knowledge of synonyms and antonyms in a variety of texts of increasing length, difficulty, and complexity. Justify inferences based on context clues to determine the meaning of unfamiliar phrases in texts of increasing length, difficulty, and complexity. Justify inference of author's intent based on knowledge of figurative language in texts of increasing length, difficulty, and complexity. **In reading comprehension:** Justify synthesis or critique of text and prediction of outcomes for texts of increasing length, difficulty, and complexity. Justify evaluation of text using sarcasm, glittering generalities, and false syllogisms citing text-based evidence in texts of increasing length, difficulty, and complexity. **In writing:** Based on audience and purpose, justify an appropriate composing process utilizing topic sentences, effective organization and transition, specific supporting details, vivid word choice, and descriptive details to produce or evaluate narrative, informational, or persuasive text of increasing complexity and length. Evaluate notes based on inquiry and research and justify findings synthesized from those notes. **In grammar:** Apply knowledge of standard English grammar purposefully using infinitives, gerunds, and participles (or phrases) to achieve a purpose. Apply knowledge of standard English mechanics and sentence structure purposefully including sentences containing parallel structures to present items in compound subjects and verbs, items in a series, and items juxtaposed for emphasis to produce texts with sophisticated grade-level syntax.
Proficient	Students performing at the proficient level: **In vocabulary:** Apply knowledge of roots and affixes (after-, auto-, con-, -ation, -ition, -al, -ial) to infer meaning of unfamiliar words in novel texts. Apply expansive knowledge of words and word meanings to communicate. Apply knowledge of grade-level appropriate synonyms, antonyms, and homonyms to evaluate word choice in a variety of texts. Use context clues to determine meanings of unfamiliar words or phrases in unfamiliar grade level text. Apply knowledge of figurative language to evaluate author's intent. Apply knowledge of reference materials to evaluate word choice and to infer meaning in a variety of texts. Analyze vocabulary usage based on appropriateness for context and purpose. **In reading comprehension:** Apply knowledge of text features, parts of a book, text structures, and genres to analyze, compare, synthesize, or evaluate text. Citing text-based evidence, analyze text to infer and synthesize information from related texts; draw valid conclusions; predict, confirm, and revise outcomes; justify evaluation of texts; revise a summary or paraphrase of events or ideas; interpret, compare, contrast, critique, or evaluate story elements, literary devices (sarcasm), sound devices, and author's purpose in increasingly complex literary text, literary non-fiction, and informational text. Evaluate author's use of facts, opinions, and tools of persuasion (glittering generalities and false syllogisms) to determine author's purpose and consider the effect on the intended audience in texts of increasing length, complexity, and difficulty. **In writing:** Use an appropriate composing process to incorporate descriptive details into texts (narrative, expository, or persuasive) and to produce narrative text utilizing adequate transitions and specific supporting details; informational text (business letters) utilizing topic sentences, adequate organization, transitions, and vivid word choices; persuasive text with a clear problem and solution, utilizing effective organization, adequate transitions, vivid word choices, and specific supporting details; and texts of a variety of modes based on inquiry and research (taking notes on important information from sources, synthesizing and evaluating important findings, selecting sources to support central ideas, concepts, and themes) to express, communicate, evaluate, or exchange ideas effectively. **In grammar:** Use standard English grammar (infinitives/phrases as nouns, adjectives, and adverbs; gerunds/phrases as nouns; and participles/phrases as adjectives) to compose or edit. Use parallel structure to present items in compound subjects and verbs, items in a series, and items juxtaposed for emphasis to compose or edit. Spell words commonly found in eighth-grade-level texts.
Basic	Students performing at the basic level: **In vocabulary:** In text of increasing length, complexity and difficulty, identify roots and affixes in multi-syllabic words; identify and produce grade-level appropriate synonyms, antonyms, and homonyms; and identify figurative language to determine meaning. **In reading comprehension:** Recognize and apply knowledge of text features, parts of a book, and text structures to gain information from texts of increasing length, complexity, and difficulty. Recognize and identify an appropriate summary or paraphrase of events or ideas in text of increasing length, complexity, and difficulty. Recognize and use appropriate text-based evidence (story elements, literary devices, sound devices) to compare texts and analyze author's purpose in texts of increasing length, complexity, and difficulty. Recognize and identify the use of fact, opinion, and persuasion tools in to determine author's purpose in texts of increasing length, complexity, and difficulty. **In writing:** Use an appropriate composing process to produce narrative text utilizing transitions and supporting details, informative text utilizing topic sentences and organization, persuasive texts utilizing supporting details, and texts presenting findings based on inquiry and research. **In grammar:** Recognize the use of standard English grammar (infinitives, gerunds, and participles and their phrases). Recognize the use of parallel structure in sentences containing items in compound subjects and verbs, items in a series, and items juxtaposed for emphasis.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	English II Language Arts Performance Level Descriptors (Note: The PLD for this grade does not contain numbered items/sub-objectives listed for earlier grades; only those new to this grade are incorporated. However, for state assessments, students are responsible for objectives and numbered items/sub-objectives in earlier grades.) With a high-stakes graduation exit exam required of English II students, the Mississippi Language Arts high school framework committee purposefully designed similar objectives in grades 9 and 10; therefore, the Performance Level Descriptors for both grades are very similar.
Advanced	Students performing at the advanced level: **In vocabulary:** Justify the use of analogical statements to infer word meaning; justify the authors' use of figurative language in multiple texts to affect setting, tone, characterization, and mood. Justify authors' use of connotative words to affect purpose. **In reading comprehension:** Using text of increased length, complexity, and difficulty, justify analysis of text features as clarification of meaning and of text structures in their effect on theme, author's purpose, etc.; justify inferences based on textual evidence to predict, draw conclusions, or determine author's purpose; justify synthesis, précis, or explication, citing text; justify analysis of the effect of literary elements for their effect on meaning. **In writing:** Justify the use an appropriate composing process to produce, analyze, and evaluate effective communication of increased length and complexity in a determined mode for a specific audience and purpose. **In grammar:** Analyze text to justify standard English grammar (objective complements) used to achieve a purpose. Analyze text to justify the purposeful use of advanced mechanics. Justify the manipulation of sentence structure (parallel structure and subordination) to achieve a purpose.
Proficient	Students performing at the proficient level: **In vocabulary:** Analyze the relationships of pairs of words in analogical statements to infer word meaning; analyze authors' use of figurative language in multiple texts in the creation of setting, tone, atmosphere, characterization, and mood. Analyze word choice and diction (including formal and/or informal language) to determine author's purpose. Analyze text to determine how authors' use of connotative words affects authors' purposes. **In reading comprehension:** Apply understanding of text features to verify, support, or clarify meaning; analyze organizational text structures to determine their effects; make inferences based on textual evidence (details, organization, and language) to predict, draw conclusions, or determine author's purpose; analyze texts to generate a summary, précis, or explication; analyze literary elements in multiple texts from various genres and media to determine their effect on meaning; distinguish fact from opinion in different media; apply understanding of electronic text features to summarize findings from multiple sources. **In writing:** Use an appropriate composing process to produce or evaluate text in the narrative mode clearly relating an event, telling explicitly what happened within a time frame defined by the event; to produce or evaluate text in the informative mode (responses to literature, position papers, expository essays) clearly expressing a main idea thoroughly developed by relevant supporting details, which are well-elaborated and sufficient in number; to produce or evaluate text in the persuasive mode using facts and opinions; and to produce or evaluate text presenting findings that compare and/or contrast information from a variety of sources. **In grammar:** Analyze text to determine the appropriate use of advanced grammar (perfect and emphatic tenses, active and passive voice, ambiguous pronoun reference, objective complements, and subject-verb agreement (in sentences containing collective nouns, indefinite pronouns, compound subjects, and prepositional phrases separating subject and verb) and the use of advanced mechanics (capitalizing regions of countries, inserting semicolons to separate items in a series when items include commas, using commas to avoid misreading, using commas with coordinate adjectives, using single quotation marks to identify quotes-within-quotes) to compose or edit; manipulate sentence structure (problems with parallelism, misplaced modifiers, and subordination) to clarify, define, or emphasize.
Basic	Students performing at the basic level: **In vocabulary:** Recognize and identify pairs of words in analogical statements and determine their meaning based on context. Recognize and identify the authors' uses of figurative language and determine the effect of that language on literary elements. Recognize and identify connotative words and determine their effect on authors' purposes. **In reading comprehension:** Apply understanding of text features to determine meaning; recognize and identify organizational text structures to determine author's purpose; make inferences based on text to determine author's purpose; evaluate text to generate a summary; recognize the use of literary elements in various genres and media to determine their effects; recognize and identify fact an opinion; employ electronic text features to present findings. **In writing:** Use an appropriate composing process to produce text in the narrative mode clearly relating an event; to produce text in the informative mode (responses to literature, position papers, expository essays); to produce text in the persuasive mode; and to produce findings from research from a variety of sources. **In grammar:** Recognize the use of advanced grammar (perfect and emphatic tenses, active and passive voice, ambiguous pronoun reference, objective complements, and subject-verb agreement) and the use of advanced mechanics (capitalizing regions of countries, inserting semicolons to separate items in a series when items include commas, using commas to avoid misreading, using commas with coordinate adjectives, using single quotation marks to identify quotes-within-quotes); recognize problems with parallelism, misplaced modifiers, subordination..
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	English IV Performance Level Descriptors
Advanced	Students performing at the advanced level: **In vocabulary:** Justify author's choice and placement of words to critique reader-text connection; analyze the authors' uses of figurative language in multiple texts to justify the author's style; justify authors' uses of word choice and diction to analyze their uses as stylistic devices; analyze multiple texts to justify connotative and denotative use of words in relation to their historical period(s). **In reading comprehension:** Analyze text structures (concept/definition) in multiple texts to justify their effects on theme and author's purpose; justify textual use of details, organization, and language to predict, to draw conclusions, or to determine author's purpose; evaluate textual criticism to synthesize responses for annotated bibliographies analyze literary elements to justify the effectiveness of patterns and connections; analyze multiple texts in different media to justify the use of persuasive technique; use electronic text features to synthesize information **In writing:** Employ the composing process to generate and to justify reflective composition in the narrative mode; to generate and to justify responses to literature in the informative mode; to generate and to justify functional documents; to generate and to justify formal persuasive texts; to generate and to justify research/I-SEARCH papers and documented texts; to generate and to justify personal statements. **In grammar:** Justify the use of advanced grammar (verb forms, tenses [including perfect progressive], voices, and moods; pronoun agreement, case, and reference; subject-verb agreement) to enhance style; justify the use of advanced mechanics to compose or edit to compose or edit; justify the use of advanced sentence structure to compose or edit.
Proficient	Students performing at the proficient level: **In vocabulary:** Analyze author's choice and placement of words to critique reader-text connection; contrast the authors' uses of figurative language in multiple texts to evaluate the author's style; analyze authors' uses of word choice and diction to compare and contrast their uses as stylistic devices; analyze multiple texts to evaluate connotative and denotative use of words in relation to their historical period(s). **In reading comprehension:** Analyze text structures (concept/definition) in multiple texts to evaluate their effects on theme and author's purpose; analyze textual evidence of details, organization, and language to predict, to draw conclusions, or to determine author's purpose; evaluate textual criticism to create responses for annotated bibliographies; analyze literary elements to determine the effectiveness of patterns and connections; compare multiple texts in different media to analyze persuasive techniques; use electronic text features to synthesize information **In writing:** Employ the composing process to generate reflective composition in the narrative mode; to generate responses to literature in the informative mode; to generate functional documents; to generate formal persuasive texts; to generate research/ I-SEARCH papers and documented texts; to generate personal statements. **In grammar:** Analyze the use of advanced grammar (verb forms, tenses [including perfect progressive], voices, and moods; pronoun agreement, case, and reference; subject-verb agreement) to enhance style; analyze the use of advanced mechanics to compose or edit; analyze advanced sentence structure to compose or edit.
Basic	Students performing at the basic level: **In vocabulary:** Examine author's choice and placement of words to identify reader-text connection; contrast the authors' uses of figurative language in multiple texts to determine the author's style; examine authors' uses of word choice and diction to recognize their uses as stylistic devices; examine multiple texts to recognize connotative and denotative use of words in relation to their historical period(s). **In reading comprehension:** Examine text structures (concept/definition) in multiple texts to identify their effects on theme and author's purpose; examine textual evidence of details, organization, and language to predict, to draw conclusions, or to determine author's purpose; recognize literary elements to identify the effectiveness of patterns and connections; compare multiple texts in different media to recognize persuasive techniques; use electronic text features to analyze information. **In writing:** Employ the composing process to recognize reflective composition in the narrative mode; to generate responses to literature in the informative mode; to complete functional documents; to recognize formal persuasive texts; to generate research/I-SEARCH papers and documented texts; to produce personal statements. **In grammar:** Use advanced grammar (verb forms, tenses [including perfect progressive], voices, and moods; pronoun agreement, case, and reference; subject-verb agreement) to enhance style; use advanced mechanics to compose or edit; use advanced sentence structure to compose or edit.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

MISSISSIPPI MATHEMATICS PERFORMANCE LEVEL DESCRIPTORS

Performance at any higher level assumes mastery of content of lower level(s).

	Kindergarten Mathematics Performance Level Descriptors
Advanced	Student performing at the advanced level:
Proficient	Student performing at the proficient level: **In number and operations:** Develop multiple representations for addition and subtraction. Count backward form 10. Create models of sets of objects 0 to 20. Compose and decompose two-digit numbers (up to 20). Determine "first" through "tenth," "next," and "last" positions. Apply mathematical language by telling when a certain number is "too many," "not enough," "just right, ""more than," "less than," or "equal to." Recognize and write numbers to represent quantities 0 to 20. **In algebra:** Describe a rule for sorting objects. Describe qualitative and quantitative changes. Reproduce and extend repeating patterns. Describe open and closed figures. **In geometry:** Identify two-dimensional figures. Demonstrate an understanding of positional words. Describe open and closed figures. **In measurement:** Measure the length, weight, and capacity of objects. Determine attributes of objects that can be compared. Describe comparisons of length, mass, and capacity. **In data analysis and probability:** Organize and describe data.
Basic	Student performing at the basic level: **In number and operations:** Count forward to 20. Count models of sets of objects 0 to 20. **In algebra:** Identify qualitative and qualitative changes. Identify repeating patterns. **In geometry:** Recognize open and closed figures. **In measurement:** Recognize the clock and calendar as measurements of time. Determine comparisons of length, mass, and capacity. **In data analysis and probability:** Collect data.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Grade 2 Mathematics Performance Level Descriptors
Advanced	Student performing at the advanced level: **In algebra:** Evaluate equations that represent addition and subtraction of whole numbers. Explain the inverse relationships between and addition and subtraction. **In geometry:** Compare three-dimensional figures. **In data analysis and probability:** Justify predictions based on given information.
Proficient	Student performing at the proficient level: **In number and operations:** Compose and decompose three-digit numbers. Round up to three-digit whole numbers to the nearest hundreds. Compare and order three-digit numbers and justify reasoning. Determine and compare the value of money up to $5.00. Add and subtract three-digit whole numbers. Justify addition and subtraction of two- and three-digit whole numbers. **In algebra:** Explain and analyze repeating and growing patterns. Analyze and generalize the inverse relationships between addition and subtraction. **In geometry:** Identify polygons according to the number of sides. Classify three-dimensional figures. Describe the effects of composition and decomposition of polygons. **In measurement:** Write time to the hour, half-hour, quarter-hour, and five-minute intervals. Select appropriate tools and units to measure length, capacity, and weight. Estimate length, capacity, and weight. **In data analysis and probability:** Interpret outcomes based on given information. Interpret and predict outcomes based on given information. Create line graphs, bar graphs, and pictographs.
Basic	Student performing at the basic level: **In number and operations:** Recall addition and subtraction facts. Add and subtract two-digit whole numbers without regrouping. **In algebra:** Use number patterns to skip count by 2's, 3's, 5's, and 10's. Identify inverse relationships between addition and subtraction. Extend repeating patterns. **In geometry:** Recognize polygons according to the number of sides. Identify three-dimensional figures. **In measurement:** Read time to the hour, half-hour, quarter-hour, and five-minute intervals. **In data analysis and probability:** Tally and record.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Grade 4 Mathematics Performance Level Descriptors
Advanced	Student performing at the advanced level: **In number and operations:** Justify estimations of products and quotients of whole numbers. **In algebra:** Justify an input/output table based on a rule. **In measurement:** Compare the relationships of rectangular area to numerical multiplication. **In data analysis and probability:** Justify predictions and solutions based on information represented on frequency tables, and stem-and-leaf plots.
Proficient	Student performing at the proficient level: **In number and operations:** Add and subtract up to five-digit whole numbers with regrouping. Add and subtract decimals through hundredths. Represent equivalence relationships between fractions and decimals. Divide four-digit dividends by one-and-two digit divisors. Model equivalent fractions. Compose and decompose five-digit numbers and decimal numbers. Model factors and multiples of whole numbers. Add and subtract fractions with like denominators. Determine benchmark numbers. Explain two or more methods of multiplying and dividing whole numbers, and justifying the process. Estimate products and quotients of whole numbers. **In algebra:** Determine the value of variables in equations and justify the process used. Explain the inverse operations of addition/subtraction and multiplication/division. Explain the properties of basic operations. Analyze a given numeric pattern and generate a similar pattern. Construct input/output function tables and generalize the rule. **In geometry:** Analyze and describe the similarities and differences between and among two-and-three dimensional geometric shapes, figures, and models. Analyze the relationships between and among points, lines, line segments, angles, and rays. Locate ordered pairs in the first quadrant of the coordinate plane. Identify transformations, reflections, and model translations. **In measurement:** Estimate a given object to the nearest eighth inch. Convert capacity, weight/mass, and length within the English and metric systems. Describe relationships of rectangular area to numerical multiplication. Use appropriate tools to estimate and compare units for measurement. **In data analysis and probability:** Interpret bar graphs, line graphs, and stem-and-leaf plots. Interpret the mean, median, and range of a set of data. Compare data and interpret quantities represented on tables and graphs.
Basic	Student performing at the basic level: **In number and operations:** Recall multiplication and division facts. Identify equivalent fractions. Use benchmark numbers. **In algebra:** Demonstrate the inverse operations of addition/subtraction and multiplication/division. **In measurement:** Measure a given object to the nearest eighth inch. Use appropriate tools to determine, estimate and compare units for measurement. Identify the relationship between and among points, lines, leg segments, angles, and rays. **In data analysis and probability:** Find the mean, mode, median, and range of a set of data. Draw and label bar graphs, line graphs, and stem-and-leaf plots.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Grade 6 Mathematics Performance Level Descriptors
Advanced	Student performing at the advanced level: **In number and operations:** Justify estimation strategies to determine the reasonableness of results in a variety of situations including rational number computations. **In algebra:** Justify algebraic expressions, equations, and inequalities to reflect a given situation. Justify the description of a rule for a function table. **In geometry:** Explain how to construct transformations. **In measurement:** Justify predictions involving the volume of prisms. Estimate the area and perimeter of regular and irregular shapes. **In data analysis and probability:** Justify prediction of trends based on graphical representation.
Proficient	Student performing at the proficient level: **In number and operations:** Use estimation strategies to determine the reasonableness of results. Compare and order rational numbers. Determine the Greatest Common Factor (GCF) and Least Common Multiple (LCM) of two numbers. Solve problems by dividing whole and decimal numbers by decimals. Model addition and subtraction of integers. Solve problems by finding the percentage of a number. Explain the meaning and relationship between absolute value and opposites. Explain the meaning of multiplication and division of rational numbers. Explain the relationship(s) among fractions, decimals, and percents. **In algebra:** Explain the process used to solve simple equations. Complete a function table based on a given rule. Describe a rule for a function table. State the properties of basic operations using variables and apply them in solving problem. Formulate algebraic expressions, equations, and inequalities to reflect a given situation. **In geometry:** Estimate and compare right, acute, and obtuse angles. Draw and classify polygons. Compare and classify transformations. Compare and classify three-dimensional figures. Explain the relationships between corresponding parts of the pre-image and image of a dilation. Identify congruent and symmetrical figures. **In measurement:** Explain the relationship of circumference of circle to its diameter, linking to pi. Determine the radius, diameter, and circumference of a circle. Use scale factors to perform dilations and to solve ratio and proportion problems. Predict and calculate the volume of prisms. Calculate the perimeter and area of regular and irregular shapes. Convert units within a given measurement system to solve problems. **In data analysis and probability:** Interpret and explain line graphs, double-bar graphs, frequency tables, stem-and-leaf plots, histograms, and box-and whisker plots. Determine how changes in data affect mean, median, mode and range. Predict trends based on graphical representation.
Basic	Student performing at the basic level: **In number and operations:** Compute using basic operations with fractions and mixed numbers. Multiply four-digit numbers by two-digit numbers. **In algebra:** Solve simple equations. **In geometry:** Label polygons. Identify right, acute, and obtuse angles. Construct transformations. Construct three-dimensional figures. **In measurement:** Apply techniques and tools to accurately find length, area, and angle measures. **In data analysis and probability:** Construct line graphs, double bar graphs, frequency tables, stem-and-leaf plots, histograms, and box-and-whisker plots.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Grade 8 Pre-Algebra Performance Level Descriptors
Advanced	Student performing at the advanced level: **In number and operations:** Justify solutions for standard real-life problems involving addition, subtraction, multiplication, and division of rational numbers. **In algebra:** Justify solutions to equations and inequalities using one variable. Justify the graph produced for linear and non-linear equations. **In geometry:** Justify solutions to real-world and non-routine problems involving congruent and similar figures. **In data analysis and probability:** Justify a given mean, mode, median and range to summarize and compare data sets. Develop a logical argument to select the appropriate measures of central tendency for a particular purpose.
Proficient	Student performing at the proficient level: **In number and operations:** Classify and order rational numbers. Evaluate expressions using order of operations and use real number properties to justify solutions. Use the inverse relationship between square roots and squares. Formulate and solve standard real-life problems involving addition, subtraction, multiplication, and division of rational numbers. Apply the concept of Greatest Common Factor (GCF) and Least Common Multiple (LCM) to monomials with variables. Explain and use the rules of exponents. Explain the inverse relationship between square roots and squares. **In algebra:** Evaluate numerical and algebraic expressions. Apply properties of real numbers with an emphasis on the distributive properties of multiplication over addition and subtraction. Solve and check inequalities using one variable. Model inequalities on a number line. Determine slope, x-intercept, and y-intercept from a graph and/or equation in slope-intercept or standard form. Graph linear equations and non-linear equations using multiple methods. Add, subtract, and multiply monomials and binomials. Given a linear graph, identify its slope as positive, negative, undefined, or zero, and interpret slope as rate of change. Predict characteristics of a graph given an equation or t-table. **In geometry:** Use two-dimensional representations of three-dimensional objects to describe objects from various perspectives. Find missing angle measurements for parallel lines cut by a transversal. Locate angles formed by a parallel lines cut by a transversal. Explain the Pythagorean Theorem and apply it to solve routine and non-routine problems. Solve real-world and non-routine problems involving congruent and similar figures. **In measurement:** Solve real-world application problems that include length, area, perimeter, and circumference. Develop, analyze and explain methods for solving problems involving proportions such as scaling and finding equivalent ratios. **In data analysis and probability:** Select the appropriate measures of central tendency. Construct and interpret scatter plots to generalize trends from given data sets. Make and list conjectures by calculating probability. Use a given mean, mode, median, and range to summarize and compare data sets.
Basic	Student performing at the basic level: **In number and operations:** Define rational and irrational numbers and their subsets. Recognize and appropriately use scientific notation. Simplify expressions using order of operations. **In algebra:** Simplify numerical and algebraic expressions. Solve and check equations using one variable. Use the Pythagorean Theorem to solve routine problems. **In geometry:** Identify angles formed by a parallel lines cut by a transversal. **In measurement:** Use formulas and/or appropriate measuring tools to find length and angle measures, perimeter, area, volume, and surface area.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Algebra I Mathematics Performance Level Descriptors
Advanced	Students performing at the advanced level: **In number:** Justify solutions to mathematical situations involving matrices. **In algebra:** Evaluate algebraic and graphical methods used to solve systems of linear equations and inequalities. **In geometry:** Justify solutions of problems that involve interpreting slope as a rate of change. **In measurement:** Justify the representation of polynomial operations with area models. **In data analysis and probability:** Justify conclusions and predictions made from scatter plots.
Proficient	Students performing at the proficient level: **In number and operation:** Use matrices to solve mathematical situations and contextual problems. **In algebra:** Solve and graph multi-step linear equations and inequalities in one variable. Solve and graph absolute value equations and inequalities in one variable. Analyze the relationship between *x* and *y* values, determine whether a relation is a function, and identify domain and range. Explain and illustrate how a change in one variable may result in a change in another variable and apply to the relationships between independent and dependent variables. Graph and analyze linear functions. Use algebraic and graphical methods to solve systems of linear equations and inequalities in mathematical and real-world situations. Multiply, and divide polynomial expressions. Factor polynomials by using Greatest Common Factor (GCF) and factor quadratics that have only rational roots. Justify why some polynomials are prime over the rational number system. Graph and analyze absolute value and quadratic functions. Analyze inequalities in two variables. **In geometry:** Apply the concept of slope to determine if lines in a plane are parallel or perpendicular. Solve problems that involve interpreting slope as a rate of change. **In measurement:** Explain and apply the appropriate formula to determine length, midpoint, and slope of a segment in a coordinate plane. Represent polynomial operations with area models. **In data analysis and probability:** Use linear regression to determine the line-of-best-fit from a given set of data. Draw conclusions and make predictions from scatter plots.
Basic	Students performing at the basic level: **In number and operation:** Apply properties of real numbers to simplify algebraic expressions. **In algebra:** Check multi-step linear inequalities in one variable. Write and graph inequalities in two variables. Add and subtract polynomial expressions. Determine the solutions to quadratic equations. **In measurement:** Solve real world problems involving formulas for perimeter, area, distance and rate.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Algebra II Performance Level Descriptors
Advanced	Students performing at the advanced level: **In number and operation:** Compare the relationship among the subsets of the complex number system. **In algebra:** Explain methods used to solve systems of absolute value and quadratic equations. **In data analysis and probability:** Justify the solution of simple combinations.
Proficient	Students performing at the proficient level: **In number and operation:** Compute with rational and radical expressions and complex numbers and express in simplest form. Evaluate powers of the imaginary unit, *i*. Multiply matrices. Calculate the determinant and inverse of a matrix. Explain and use the inverse relationship between exponential and logarithmic expressions. Apply the properties of logarithms to simplify and evaluate logarithmic expressions. Solve application problems involving exponential functions related to growth and decay. Solve application problems involving arithmetic and geometric sequences and series. **In algebra:** Solve systems of absolute value and quadratic equations. Given constraints, find the maximum and minimum value(s) of a system of linear inequalities and explain reasoning. Use the discriminant to classify and predict the types of solutions of quadratic equations and justify the classification. Interpret the zeros and maximum or minimum value(s) of quadratic functions. Explain the results of compositions of functions. Factor sums and differences of cubes and factor polynomials by grouping. Solve radical equations. Write equivalent forms of rational expressions using real and complex conjugates. Solve equations involving rational expressions and verify solutions. Given the solution(s) to a quadratic equation, find an equation to fit the solution(s) and justify the process. Explain the Binomial Theorem and use it to expand binomial expressions raised to positive integral powers. **In geometry:** Determine and justify whether the inverse of a relation or a function exists. Sketch and describe transformations of quadratic and absolute value functions. Represent complex numbers and the sum of complex numbers in a complex coordinate plane. Identify and sketch the essential graphs of the four conic sections: circle, parabola, ellipse, and hyperbola. **In measurement:** Use absolute value inequalities to describe the level of accuracy of measurements in real-world situations. **In data analysis and probability:** Identify and use permutations and combinations. Model a data set using the median-fit-method with a linear equation and make predictions based on the model and the equation.
Basic	Students performing at the basic level: **In number and operation:** Diagram the relationship among subsets of the complex number system. Add matrices and perform scalar multiplication. **In algebra:** Solve compound and absolute value inequalities. Graph and write solutions in interval notation. **In geometry:** Classify functions based on sketches of their graphs. **In measurement:** Verify the appropriateness of the numerical value and the units of a variable in an equation. **In data analysis and probability:** Use scatter plots and linear and quadratic regression analysis. Solve simple combinations.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Trigonometry Performance Level Descriptors
Advanced	Students performing at the advanced level: **Algebra:** Explain and justify trigonometric identities.
Proficient	Students performing at the proficient level: **Number and Operations:** Perform conversions (polar to rectangular coordinates, rectangular to polar coordinates, and rectangular to trigonometric forms of complex numbers and trigonometric to rectangular forms of complex numbers). Determine the product and quotient of complex numbers in trigonometric form. Apply DeMoivre's Theorem. Explain and use the addition formulas for sine and cosine. Recognize and draw different notations for vectors. Analyze properties of vectors and the effects of these properties on operations with vectors. Apply the limit definition of e. **Algebra:** Identify and apply trigonometric identities. Verify identities analytically and with technology. Solve trigonometric equations in real-world situations. **Geometry:** Find exact values of trigonometric functions of special angles in the unit circle. Recognize, sketch, and interpret graphs of the six trigonometric functions and include restrictions on their domain. Model and apply right triangle formulas, Law of Sines and Law of Cosines. Use the unit circle to solve real-world applications. Use the graph of polar coordinates and associated equations to model real-world applications. **Measurement:** Using graphs of functions of the form f(t) = A sin (Bt + C) or f(t) = A cos (Bt + C), interpret A B, C in terms of amplitude, frequency, period, and phase shift. Given one angle and the measures of two adjacent sides, determine the area of a triangle and explain the process used.
Basic	Students performing at the basic level: **Number and Operations:** Perform conversions (degree to radian and radian to degree). **Algebra:** Determine the domain and range of trigonometric functions. **Geometry:** Apply the six trigonometric functions in relation to a right triangle to solve real-world applications. **Measurement:** Find arc length and sector area of a circle.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Discrete Mathematics Performance Level Descriptors
Advanced	Students performing at the advanced level: **In number:** Justify the solution of problems using matrices. **Algebra:** Justify a sequence recursively and explicitly.
Proficient	Students performing at the proficient level: **Number and Operations:** Model relationships and solve problems using Graph Theory. **Algebra:** Apply the principles of logic to determine the validity of arguments. Define a sequence recursively and explicitly. Use mathematical induction to verify explicit formulas for arithmetic, geometric, and other sequences and/or series. Add, subtract, multiply, and divide sets, and find unions, intersections, differences, and complements of sets. Find the explicit formula for a recursively-defined sequence using iteration. **Geometry:** Construct a logic circuit from a Boolean expression to determine output. Construct a Boolean expression given a logic circuit. Construct a logic circuit and Boolean expression given an input/output table. Determine the number of vertices and edges as well as walks, paths, and circuits in a graph. Construct a graph given the adjacency matrix of the graph and vice versa. Determine connectivity of a graph using an adjacency matrix. Determine the number of walks between two vertices using powers of the adjacency matrix. Explain why a graph is a tree. Determine the level, parent, siblings, ancestors, descendants and height of a rooted tree. Construct walks, paths, and circuits given an edge/vertex string. Determine whether Euler and Hamiltonian circuits exist in a given graph. **Data Analysis and Probability**: Identify winning strategies for basic games. Solve problems using discrete random variables. Create and use simulations for probability models.
Basic	Students performing at the basic level: **Number and Operations:** Use matrices to model and solve problems. **Algebra:** Define sentence (proposition) and use logic to determine if the sentence is true or false. Define simple compound statements: negation, conjunction, disjunction, contradiction and tautology using truth tables. Define a conditional statement using truth tables. **Geometry:** Use Venn diagrams to represent basic operations on sets. Determine the shortest route in a spanning tree. **Data Analysis and Probability**: Determine the characteristics that result in a fair game.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

	Statistics Performance Level Descriptors
Advanced	Students performing at the advanced level: **Number and Operations:** Explain simulations and experiments created that correlate to theoretical probability. **Algebra:** Explain methods using algebraic concepts to determine mathematical models of best fit.
Proficient	Students performing at the proficient level: **Number and Operations:** Describe the comparison of center and spread. Interpret and apply the concept of the Law of Large Numbers. Construct and interpret sample spaces, events, and tree diagrams. Identify types of events. Calculate geometric probability. Use Markov Chains. Create simulations and experiments that correlate to theoretical probability. Generate and interpret probability distributions. **Algebra:** Analyze and describe outliers and shape of the data. Calculate and explain applications of standard deviation, z-scores, t-scores, and quartiles. Select and use appropriate statistical methods in decision-making and hypothesis testing. **Geometry:** Determine and justify the graph type that best represents a given set of data. Create graphs with scales that fairly display the data. **Data Analysis and Probability:** Make inferences and predictions from charts, tables, and graphs. Determine the most appropriate measure to describe a data set. Explain and defend regression models. Explain the generalizability of results and types of conclusions that can be drawn. Compare and contrast sampling methods. Design and execute a statistical experiment. Analyze sources of bias and sampling error(s).
Basic	**Number and Operations:** Apply the counting principles, including permutations and combinations. **Algebra:** Calculate and explain applications of mean, median, mode, and range. Use algebraic concepts and methods to determine mathematical models of best fit. **Geometry:** Organize data using graphs that are appropriate to the data set. **Data Analysis and Probability:** Use curve fitting to make predictions.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

MISSISSIPPI SCIENCE PERFORMANCE LEVEL DESCRIPTORS

Performance at any higher level assumes mastery of content of lower level(s).

	Grade 5 Science Performance Level Descriptors
Advanced	Students performing at the advanced level: **In structure and function of living systems:** Demonstrate an understanding of the functions of the body systems and describe their interdependency to each other. **In reproduction and heredity:** Differentiate between sexual and asexual reproduction. Compare and contrast individual inheritance traits (dominant and recessive). **In ecology and biodiversity:** Compare and contrast ways different organisms adapt and survive in a particular environment. Compare and contrast food chains and food webs in ecosystems and biomes. **In Earth structure and processes:** Analyze and determine the results of internal and external forces that affect the Earth's surface. Use a variety of weather tools to collect data, analyze, and chart weather patterns. Analyze where fossils are found as indicators of how life and environmental conditions have changed. **In Earth and space systems and interactions:** Determine how the Earth's motion defines the day and the year and influences the phases of the moon, eclipses and tides. Explain and compare the correct season in various hemispheres based on the tilt of the Earth's axis and revolution around the sun. **In properties of matter:** Observe and record the results of an experiment using a variety of everyday substances that involves physical and chemical changes. Analyze the cause of a chemical reaction. Analyze and interpret data collected with simple measuring devices (metric and English units). **In properties of energy:** Demonstrate an understanding of an electromagnet by explaining its design and construction. Examine, measure, and graph the effect of force and motion on objects using metric and English units. Explain how a simple and compound machine works.
Proficient	Students performing at the proficient level: **In structure and function of living systems:** Identify and describe levels of organization in living systems, progressing from cells to whole organisms. Identify and describe the body systems (circulatory, respiratory, digestive, skeletal, and nervous). Compare and contrast flowering and nonflowering plants. Identify the four requirements of photosynthesis. **In reproduction and heredity:** Describe the sexual and asexual reproductive functions of organisms. Identify methods of pollination and germination in plants. Identify and describe inherited traits of given organisms. **In ecology and biodiversity:** Describe the results of harmful human actions (pollution, endangerment, extinction, and population growth) that impact ecosystems, as well as the results of helpful human actions (conservation to protect and manage the environment). Explain ways organisms adapt and survive in a particular environment/biome. Describe and illustrate elements of a food chain/web, including consumer, producer, and decomposer. **In Earth structure and processes:** Identify internal and external forces such as weather patterns, volcanoes, and earthquakes and describe resulting changes in the Earth's surface. Identify fossils as indicators of how life and environmental conditions have changed. Explain the causes and effects of the water cycle as it relates to the atmosphere, hydrosphere, and lithosphere. Predict weather patterns using a variety of weather instruments such as thermometer, anemometer, rain gauge, barometer, and hygrometer. **In Earth and space systems and interactions:** Illustrate how the Earth's motion affects day, year, eclipses, and phases of the moon. Explain how gravity, tilt, and revolution of the Earth influence tides, seasons, and constellations. **In properties of matter:** Identify and describe physical and chemical properties of matter such as density, mass and volume, boiling and freezing points, and solubility of a substance. Identify common elements that combine chemically to produce compounds. Use simple measuring devices (metric and English units) to collect and record data. **In properties of energy:** Identify the effect motions and forces have on an object using metric and English units to record results. Identify the differences in a variety of circuits including open, closed, series, and parallel circuits. Construct an electromagnet.

	Grade 8 Science Performance Level Descriptors
Advanced	Students performing at the advanced level: **In structure and function of living systems:** Differentiate between plant and animal cells. Compare interactions among body systems, as well as diseases that result in body system failures or infections by other organisms. **In reproduction and heredity:** Evaluate advantages and disadvantages of purebred and hybrid species. Define meiosis by relating the process to genetic continuity in organisms. **In ecology and biodiversity:** Describe the uses of the products of photosynthesis and explain how the process of photosynthesis influences an ecosystem. Relate biodiversity, adaptation, and extinction to the survival strategies of organisms in an ecosystem. Interpret experimental data based on plant behavior and its response to water, gravity and light. Evaluate ecosystems to determine human impact. **In Earth structure and processes:** Differentiate the components/stages of a geological timetable, including changes in animals and landforms Distinguish Describe methods and tools used to date fossils and rocks. Use a weather map to predict weather patterns. **In Earth and space systems and interactions:** Describe and assess the significance of Earth's location within the galaxy. Illustrate the relationship between lunar phases and eclipses. **In properties of matter:** Use chemical and physical properties of matter to determine a substance's identity. Apply information from the periodic table to describe the distinction among atoms, ions, and molecules. Use the factor label method to calculate metric conversions. **In properties of energy:** Convert from one energy form to another. Analyze mechanical and electromagnetic waves to evaluate energy transformations
Proficient	Students performing at the proficient level: **In structure and function of living systems:** Compare and contrast plant and animal cells. Identify and describe all body systems and their functions, showing the interactions between respiratory and circulatory, and between reproductive and endocrine systems. **In reproduction and heredity:** Distinguish genes as sections of DNA molecules that carry the genetic code for inherited traits. Differentiate the processes of mitosis and meiosis. Compare and contrast homozygous and heterozygous traits, phenotype and genotype, and hybrid and purebred species. **In ecology and biodiversity:** Describe the process of photosynthesis. Explain environmental concerns (overpopulation, greenhouse effect, urbanization, and sea-level rise) as they relate to regulations and protection of land, water, and air. **In Earth structure and processes:** Explain tests used to identify minerals. Distinguish between chemical and physical weathering as it relates to the forces of nature. Identify fossils specific to Mississippi. Compare and contrast the properties and composition of saltwater, freshwater, and brackish water. Use a weather map to determine how temperature, fronts, cloud formation, and moisture affect regions. Compare and contrast the nitrogen, water, carbon dioxide and oxygen cycles. **In Earth and space systems and interactions:** Compare and contrast different types of galaxies based on characteristics and shapes. Identify causes of lunar phases, eclipses and Earth seasons. **In properties of matter:** Apply chemical and physical properties to understand the characteristics of matter. Interpret information given on the periodic table to write simple formulas, to predict reactions between elements, and to determine chemical and physical properties. Use the metric system to calculate unit conversions while measuring an object's position, direction of motion, and speed. Use simple machines to investigate Newton's three laws of motion. **In properties of energy:** Compare sources of energy to distinguish energy transformation in various forms.

	Biology I Performance Level Descriptors
Advanced	Students performing at the advanced level: **Nature of science:** Design an experiment and carry it out by collecting data, analyzing data, and drawing conclusions. **Chemical basis of life:** Classify organic molecules into four groups by characteristics; describe the interdependence between the oxygen and carbon dioxide cycles. **Cell:** Analyze the function of organelles based on their roles in both plant and animal cells. **Genetics and the molecular basis of heredity:** Predict Punnett Square outcomes, using scientific terminology for all inheritance patterns. **Natural selection and diversity:** Compare and contrast similarities and differences among all the kingdoms due to adaptations; use a dichotomous key to identify organisms. **Ecology:** Predict the impact on a food chain or food web when one organism dies, etc. Predict the loss of energy as a food chain progresses.
Proficient	Students performing at the proficient level: **Nature of science:** Conduct an experiment, collect data, and follow all safety rules. Interpret data in charts, tables, and graphs from scientific research and experiments. **Chemical basis of life:** Identify reactants and products in the photosynthetic process with the organelles (chloroplasts) in which they occur. Classify solutions using pH. Explain basic biochemical basis of life, including the function of inorganic and organic compounds, enzymes, respiration (aerobic versus anaerobic). **Cell:** Distinguish between plant and animal cells based on organelles. Differentiate prokaryote versus eukaryote cells. Describe the organization of cells in multicellular organisms. **Genetics and the molecular basis of heredity:** Solve Punnett square problems and set up the squares given the appropriate terminology (monohybrid problems, mutations, and inheritance patterns using gel electrophoresis, pedigree, and karotypes). Compare and contrast the structure and function of DNA and RNA. **Natural selection and diversity:** Describe characteristics of given kingdoms and give examples of organisms that are characteristic of particular kingdoms. Compare the structure and function of viruses and bacteria. Identify evidence of change in organisms. Describe the results of natural selection in speciation, diversity, and adaptation. **Ecology:** Describe differences in food chains and food webs, and relationships between organisms in ecosystems. Analyze the flow of matter and energy in cycles. Compare the major biomes and their characteristics. Describe energy transfer through trophic levels. Describe long- and short-term changes to environment due to natural events and human actions.
Basic	Students performing at the basic level: **Nature of science:** Perform experimental tasks by following step by step directions. **Chemical basis of life:** Identify the four requirements of photosynthesis in the food-making process in plants. **Cell:** Recognize the basic organelles and their functions. **Genetics and the molecular basis of heredity:** Identify traits as dominant or recessive based on symbols used to represent them. **Natural selection and diversity:** Recognize major differences between plant and animal kingdoms (e.g., vascular/non-vascular; vertebrate/invertebrate. Identify basic kingdoms. **Ecology:** Identify ways that organisms obtain food.
Minimal	Students performing at the minimal level inconsistently demonstrate the knowledge or skills that define basic level performance.

Glossary

Prepared for the Mississippi Department of Education
for Use in the Development of Performance Level Descriptors

Alignment:	The similarity or match between and among the content standards, performance standards, curriculum, instruction, and assessments relative to knowledge expectations, skill expectations, and levels of cognitive challenge.
Assessment(s):	Any systematic method of obtaining evidence from tests and other sources to draw inferences about characteristics of people, objects, or programs for a specific purpose.
Benchmarks:	See objectives.
Cognitive Challenge:	The level of Bloom's Taxonomy (or other classification system) that describes the level of thinking required to accomplish a task. For example, in Bloom's system, synthesis is at a higher level of cognitive challenge or demand than comprehension.
Competencies:	See content standards.
Content:	Subject matter, e.g., economics, physics, Earth science, geology.
Content Domain:	The portion of all knowledge and skill in a subject matter area that is selected for the content standards once consensus is reached that it represents what is important for teachers to teach and students to learn. Mathematics is an example of a content domain.
Content Standards:	Broad descriptions of what students should know and be able to do in a content area at the end of a grade level or grade span.
Curriculum:	What is taught.
Curriculum Framework:	A document that may contain grade-level content standards or the competencies, objectives, and curriculum used to teach them. Sometimes referred to as "frameworks," such documents provide guidance for the development of more detailed curriculum. A set of content standards is sometimes referred to as a curriculum framework.
Cut Scores:	Cut scores represent one element in a system of performance standards. A cut score is a specified point on a score scale at which scores above that point are interpreted differently from scores below that point. Typically, two or more cut scores may be used to define three or more score categories, e.g., one cut score distinguishing between "below basic" and "basic," a second cut score distinguishing between "basic" and "proficient," and a third cut score distinguishing between "proficient" and "advanced."
Enablers:	Content, processes, or skills that have *not* been taught, but that are necessary to the performance of standards.
Exemplars:	Exemplars represent one element in a system of performance standards. Exemplars are examples of student work across the full population of students; they are used to illustrate the full range of performance representative of each performance level.

Assessments:	content standards that specify the knowledge and skills students are expected to acquire as a function of schooling. Results are then interpreted against a set of criteria or performance standards that define student performance relative to the content standards represented by the test items.
Strand:	A subdomain of a content domain that represents a significant learning dimension specific to the content area. For example, language arts typically consists of basic reading, reading comprehension, writing, and grammar strands. Mathematics typically consists of numbers and operations, algebra, geometry, measurement, data analysis, and probability strands. See also standard.
Vertical Alignment:	The extent of alignment within content domains across grade levels, e.g., the extent to which the science standards, curriculum, and assessments are in alignment from grades K-12.

References

Hansche, L. N., et al. (1998). *Handbook for the development of performance standards: Meeting the requirements of Title I*. Washington, DC: U.S. Department of Education and Council of Chief State School Officers. Available from www.ccsso.org

LaMarca, P. M., Redfield, D. L., & Winter, P. C. (2000). *State standards and state assessment systems: A guide to alignment*. Washington, DC: Council of Chief State School Officers.

Redfield, D. L., et al. (2001). *Critical issues in large-scale assessment: A resource guide*. Washington, DC: Council of Chief State School Officers.

Sheinker, J., & Redfield, D. L. (2001). *Handbook for professional development in assessment literacy*. Washington, DC: Council of Chief State School Officers.